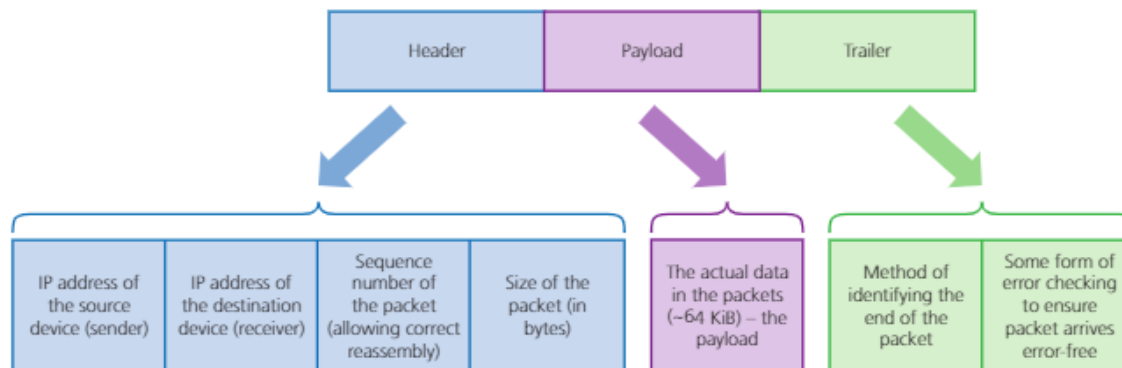


DATA TRANSIMISION

Chapter 2

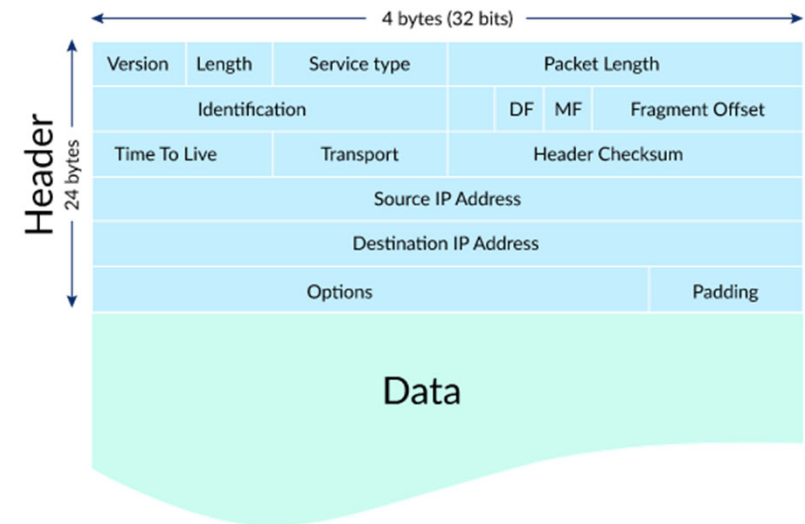
DATA PACKETS

- What is data packet?
 - a small part of a message/data that is transmitted over a network; after transmission all the data packets are reassembled to form the original message/data
 - It has three parts: header, payload and trailer
 - Each packet can be sent along a different route to its destination



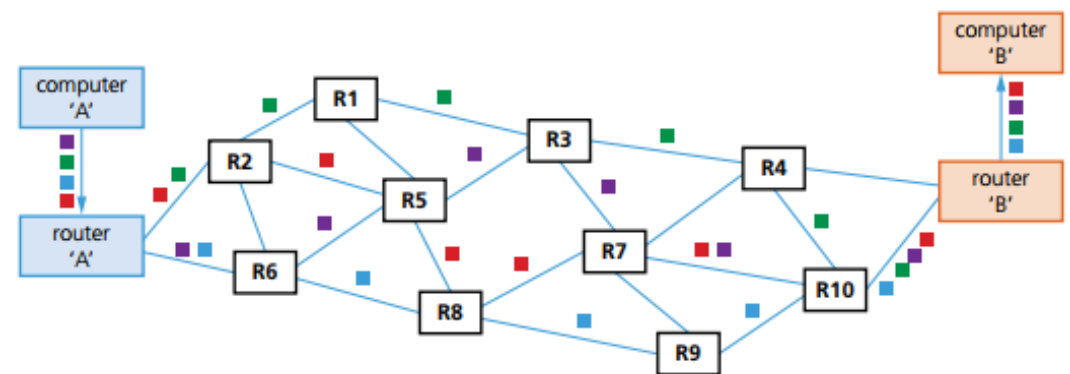
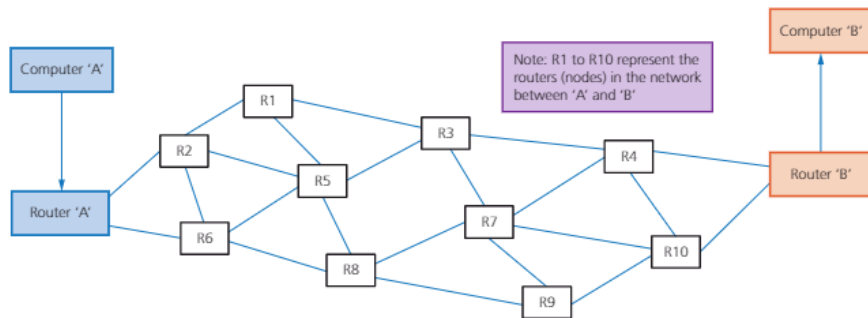
DATA PACKETS

- Packet header
 - the part of the data packet that contains
 - IP addresses of the sender and receiver
 - packet number which allows reassembly of the data packets
 - Packet size to ensure the receiver can check if all the packets have arrived
- Payload
 - It is the data of the packet



PACKET SWITCHING

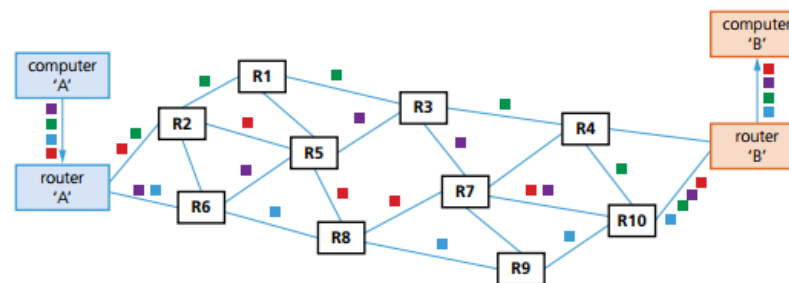
- Packet switching
 - data to be transmitted is divided into blocks of a fixed size called 'packets'
 - these packets are transported through the network independently (may take different routs) and arrived in a non-sequential order



▲ Figure 14.8 An example of packet switching

PACKET SWITCHING

- How does this work?
 - each packet will follow its own path (route)
 - routers will determine the route of each packet
 - routing selection depends on the number of packets waiting to be processed at each node
 - the shortest possible path available is always selected – this may not always be the shortest path that could be taken, since certain parts of the route may be too busy or not suitable
 - unfortunately, packets can reach the destination in a different order to that in which they were sent.



▲ Figure 14.8 An example of packet switching

PACKET SWITCHING

- The benefits of packet switching are:
 - there is no need to tie up a single communication line
 - it is possible to overcome failed, busy or faulty lines by simply re-routing packets
 - it is relatively easy to expand package usage
- The drawbacks of packet switching include:
 - packets can be lost and need to be re-sent
 - the method is more prone to errors with real-time streaming (for example, a live sporting event, a live concert)
 - there is a delay at the destination whilst the packets are being re-ordered.